Middle Sevier River – #16030003

Rapid Watershed Assessment

March 2007

This resource assessment is designed to gather and display information specific to this HUC (watershed). This assessment will highlight the natural and social resources present in the watershed, detail specific concerns, and be used to aid in resource planning and target conservation assistance needs. This document is dynamic and will be updated as additional information is available through a multi-agency partnership effort. The general observations and summaries are listed first, followed by some selected resource inventories.

Contents

Introduction

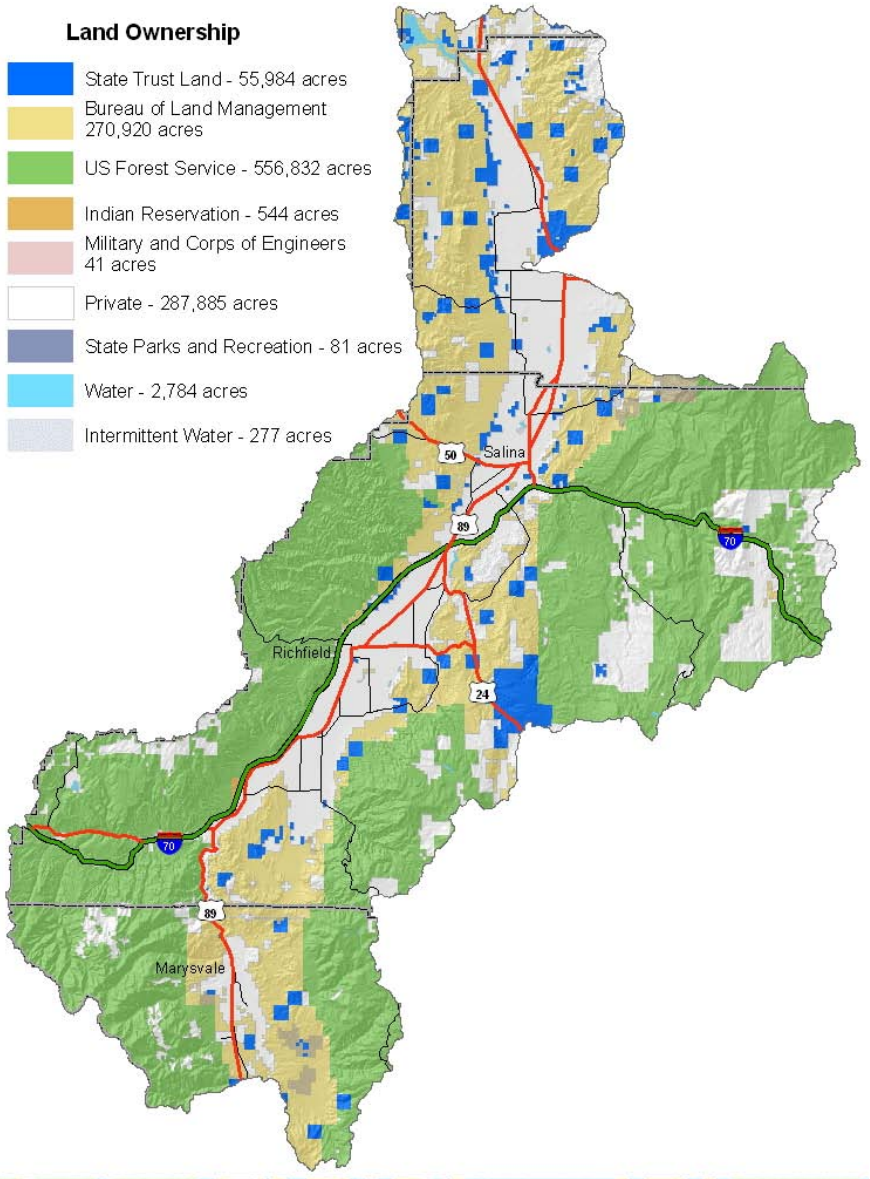
The Middle Sevier 8-Digit Hydrologic Unit Code (HUC) area is comprised of acres within Sevier, Sanpete and Piute Counties. 88 percent of the subbasin is described as Forestland, Pinyon-juniper woodland, sagebrush, other Shrublands, grassland and Salt Desert shrurland. There are four permitted Confined Animal Feeding Operations (CAFOs) and about 2,000 permitted animals in the basin. Major resource concerns include, invasive and noxious weeds; insufficient surface & ground water to meet livestock, wildlife, and irrigation needs; impaired water quality; and loss of wildlife habitat. High costs, unreliable markets, and inadequate incentives limit conservation adoption among the farmers and ranchers in the basin.

The Richfield and Manti NRCS Service Centers, and the Sevier, Piute and Sanpete Soil Conservation Districts, provide much of the conservation assistance in this basin.

This assessment is intended for planning purposes only.

The Sevier Rive essentially terminates within the HUC near agricultural lands surrounding the community of Delta. Located in the high desert of the Great Basin, availability of water sets the geography of community settlement and growth.

The economy has a strong agricultural base. This basin contains the highest alfalfa hay producing area in the state. It has the 3rd largest cattle inventory, (2nd for milk cows and 4th for beef). It's ranked 4th for all barley, 3rd for grain and silage corn. It ranks 4th in the state for all cash receipts from farming. This agriculture is primarily dependant on irrigation water supplied by the Sevier River, mountain streams and deep water aquifers. Livestock grazing of both public and private rangelands is an intrinsic part of the agricultural, social, and economic base. Power production and mining are also important industries in the basin with critical links to natural and social resources in the basin.



Land Ownership

The watershed covers about 1,187,588 acres with 827,792 acres or 70 percent federally managed There are 287,885 acres of private land and 544 acres of Tribal lands. State lands include 55,984 acres within the basin.

Watershed management is the protection, conservation and use of all the natural resources of a drainage basin to keep the soil mantle in place and productive and to produce the quality water needed for downstream users (Sevier Basin Water Plan, 1999). The US Forest Service and Bureau of Land Management manage the upper watershed. Cooperation and coordination of treatments within the basin can leverage future restoration, enhancement and technical assistance funds.

Special considerations

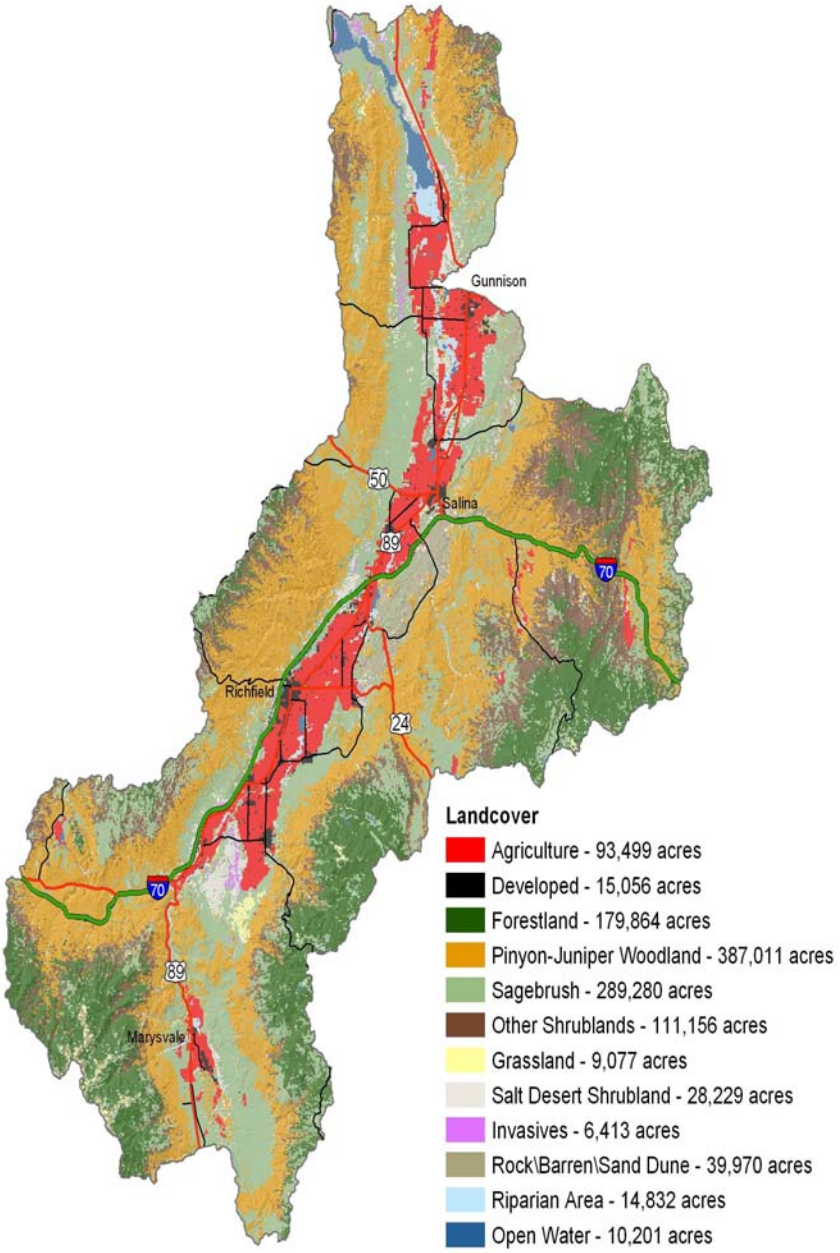
- The Sevier River is one of the most used rivers in the United States. The Middle Sevier basin is the central section of the Sevier River Basin and is used extemsovely for irrigated crop production. The Sevier River Water Users Association has implemented a "Virtual Watershed" monitoring system to manage their water resources. This site can be accessed at: http://sevierriver.org/
- **The Sevier River – Cox Decree:** In 1916, the Richlands Irrigation Company brought action against various Lower Basin interests to adjudicate its claimed rights. The cost of litigation associated with the dispute exceeded $350,000. Because the costs of resolving the more than 750 remaining claims was likely to exceed the value of land and water, regional committees were formed to resolve these issues. Most of these committees adopted, by stipulation, the existing Higgins and Morse Decrees, and eventually succeeded in reaching a decision in the Richlands action, which is now known as the Cox Decree.
- The Cox Decree did not eliminate or even diminish water conflicts in the Basin. Even though it helped define individual rights in local areas, it was much less specific about the allocation of water rights over the length of the river. In addition, the Cox Decree is a legal document and not an operation plan. As a result, the river commissioners who began administering the river in 1934, under the direction of the State Engineer, had to interpret various provisions of the decree. The Cox Decree finalized in 1936 was the final determination of all the water rights. Although there have been modifications to this decree, it is still in use today.
- Enhanced management in the Sevier River is facilitated by (1) the concept of pro rata division introduced by the Higgins Decree of 1901, which ensures that all irrigation systems are in place to utilize water when water is plentiful; (2) the ability to treat water rights as personal property, i.e., water can be bought, sold, and used as collateral, just like land, homes and automobiles; and (3) the 1938 Agreement, which helped stabilize the water supply from year to year. As a result, the water supply is stable, and water can flow to the most beneficial use. During drought, only the most productive land is irrigated.
- **Sensitive Species within HUC #16030003:** Records of occurrence for the following sensitive species within a one-mile radius of the HUC boundary include: American three-toed woodpecker, *American white pelican, bald eagle, big free-tailed bat, black swift, Bonneville cutthroat trout, Colorado River cutthroat trout, burrowing owl, ferruginous hawk, grasshopper sparrow, greater sage-grouse, kit fox, Lewis's woodpecker, long-billed curlew, northern goshawk, short-eared owl, southern Bonneville springsnail, Townsend's big-eared bat, Utah prairie dog, pygmy rabbit, western toad, carinate Glenwood pyrg, smooth Glenwood pyrg, southwestern will flycatcher.* All of the aforementioned species are included on the *Utah Sensitive Species list (Ut-DWR, 9/19/2006).* In addition, within the basin there are records of occurrence for *heliptrop milkvetch,* a federally listed plant.
- A TMDL study has been completed this basin which includes the lower Sevier River. The study can be used to help with future targeting of treatment within the basin as it relates to water quality. Report can be found on the web at: http://www.waterquality.utah.gov/TMDL/Sevier_River_TMDL.pdf
- Streambank condition along this portion of the Sevier has deteriorated over the years for various reasons. A comprehensive review and characterization of bank erosion and riparian corridor condition will be needed to prioritize and recommend treatment
- Local input for this assessment has indicated that **weed control** is a prime concern and should be addressed through a cooperative effort with federal, state, county and other groups. Invasive vegetation is mapped to include about **6,413 acres** within the basin. This acreage likely does not include county road right of ways and other areas with noxious weeds
- There are opportunities for funding of wildlife enhancement projects through a new USDA-Farm Service Agency initiative to help landowners. For more information look on the web at: www.fsa.usda.gov and click on Conservation Programs
- There are about 362 "beginning farmers" and about 154 "potential limited resource farmers"

Land Use/Cover

Agriculture is an important part of the economy within this basin especially along the Sevier River valley where water is readily available. A little over 93,000 acres is used intensively for agricultural purposes throughout the basin. Pinyon-juniper and sagebrush rangeland comprise about 57 percent of the basin.

In 1996 there were 62,330 acres of surface irrigated cropland in Sevier County which is predominantly within the middle Sevier basin Sub-irrigated pasture and hay makeup another 480 acres within Sevier County.

Land Cover/Land Use	Acres	%
Agriculture	93,499	7.9%
Developed	15,056	1.3%
Forestland	179,864	15.1%
Pinyon-Juniper	387,011	32.6%
Sagebrush	289,280	24.4%
Other Shrublands	111,156	9.4%
Grassland	9,077	0.8%
Salt Desert Shrubland	28,229	2.4%
Invasives	6,413	0.5%
Rock\Barren\Sand Dune	39,970	3.4%
Riparian Area\	17,832	1.5%
Open Water	10,201	0.9%
HUC 16030003 Totals	1,187,588	100%
Totals may not add due to rounding and small unknown acreages.		



Resource Assessment Summary

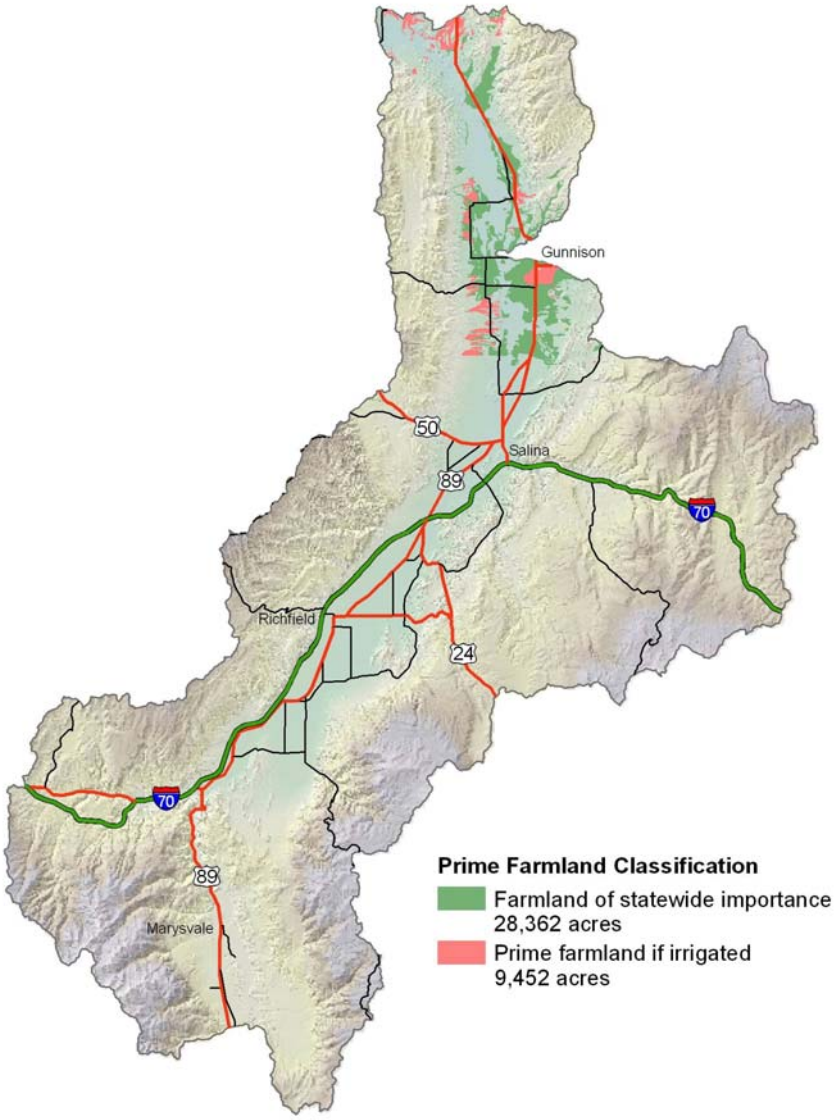
Categories	Concern high, medium, or low	Description and Specific Location (quantify where possible)
Soil	High	Sheet&rill, gully erosion along the alluvial fans are excessive and delivering sediments and phosphorus that is identified in the TMDL's for the county. This erosion is also effecting the range health by reducing the water holding capability of these fans and one of the major causes of desertification and the lowering of the range health. Estimated critically eroding range 95,460 acres range in at risk health 334,114 acres
Water Quantity	High	Improvements in the irrigation efficiencies to make the best use of the water available. Much of the irrigated ground in the county is flood irrigated and irrigation induced erosion is a problem improvements to these systems will reduce sedimentation and make the best use of the available water resource. Hayland flood irrigated 52,981 ac. 50% less than 40% efficient, 9350 ac. sprinkler 75% less than 60%
Water Quality Ground Water	Medium	over irrigation could have an impact on the ground water supplies through deep percolation of pesticides and nutrients. This is also the source of other users water rights down stream.
Water Quality Surface Water	High	The TMDL's have identified sediment and phosphorus as the primary sources of water quality coming from irrigated lands, rangelands and streambank. BMP's to correct the problem are improved irrigation efficiencies and improved range health. See soils for rangeland needs. pastures 13087 ac. 75% need improvements about 9800 ac.
Air Quality	Low	This is in good condition due to rural nature of the area. The major sources of pollutants are from outside the area and beyond their control.
Plant Suitability	Medium	Operator in the county are using the new varieties of hay and grain and are willing to experiment. Range seedlings are multi varieties and no long use monoculture seed mixes.
Plant Condition	High	Rangeland health in the shrub-steppe is declining which has increased the erosion off the range lands and lowered the productive potential of these lands for livestock and wildlife. Thousands of acres of closed sagebrush stands have lost species diversity. Pasturelands in the county are in poor to fair condition. Species have gone from high valued species to low value. Compaction has reduced infiltration and increased runoff and reduced the filtering capacity of these lands. Lands needing improvemnts Range: 795,500 ac. Pasture:13,087 ac. Haylands: 62,331 ac.
Fish and Wildlife	High	Most of the operators use the federal lands for part of their operations and the possibility of a species at risk or listed species with the added regulation greatly concerns them.
Domestic Animals	High	Finding good markets for their products and developing new markets
Social and Economic	High	Agriculture does not pay all of the bills many of the operators have other jobs and many of their wife's work outside the home. People moving in from outside the area with differing ideas of how things should be is a concern.

Prime and Unique Farmland

Land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, forage, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor, and without intolerable soil erosion.

Additional farmland of statewide or local importance

Land identified by state or local agencies for agricultural use, but not of national significance

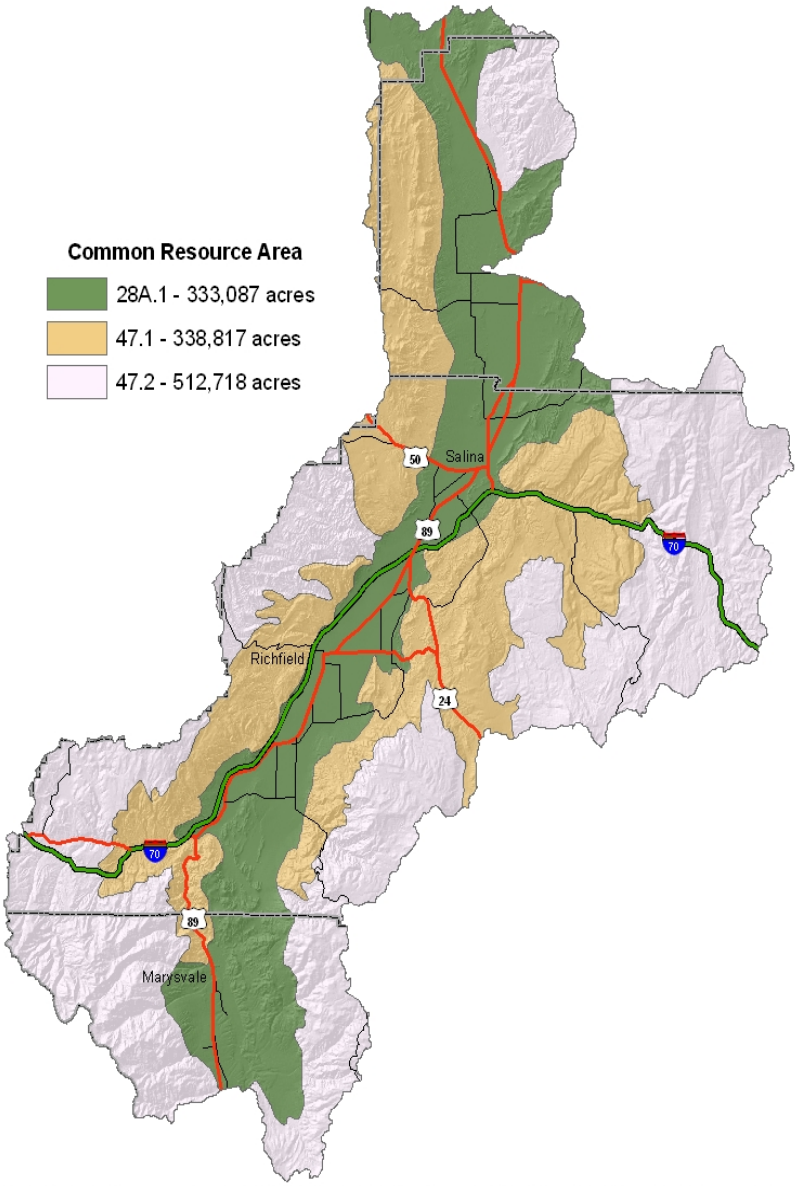


Resource Concerns – SOILS

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Soil Erosion	Sheet and Rill		X	X	X	X		X	X							
	Wind		X	X	X	X		X	X							
	Ephemeral Gully			X	X	X		X	X							
	Classic Gully				X	X		X	X							
	Streambank		X	X	X	X		X	X							
	Shoreline															
	Irrigation-induced		X	X												
	Mass Movement				X	X		X	X	X						
	Road, roadsides and Construction Sites															
Soil Condition	Organic Matter Depletion				X	X		X	X							
	Rangeland Site Stability				X	X		X	X							
	Compaction			X	X	X		X	X							
	Subsidence															
	ContaminantsSalts and Other Chemicals		X	X	X	X										
	Contaminants: Animal Waste and Other OrganicsN		X	X												
	Contaminants: Animal Waste and Other OrganicsP		X	X												
	Contaminants: Animal Waste and Other OrganicsK															
	Contaminants : Commercial FertilizerN		X	X												
	Contaminants : Commercial FertilizerP		X	X												
	Contaminants : Commercial FertilizerK															
	ContaminantsResidual Pesticides		X	X												
	Damage from Sediment Deposition		X	X												

Common Resource Areas

DESCRIPTIONS



28A.1 Great Salt Lake Area - Sagebrush Basins and Slopes

This unit consists of basins, fan piedmonts and low terraces that are often internally drained. Soil temperature regimes are mostly mesic, and soil moisture regimes are typically aridic bordering xeric with some xeric areas mainly in the urban and cropland zones along the western slopes and valleys of the Wasatch Mountains. Soils range from shallow to very deep. Lime- and silica-cemented hardpans are common on stable landscapes. Typical vegetation includes Wyoming big sagebrush, black sagebrush, winterfat, Indian ricegrass, with singleleaf pinyon and Utah juniper in some areas.

47.1 Wasatch and Uinta Mountains - Low Mountains and Foothills; Utah, Wyoming, and Colorado

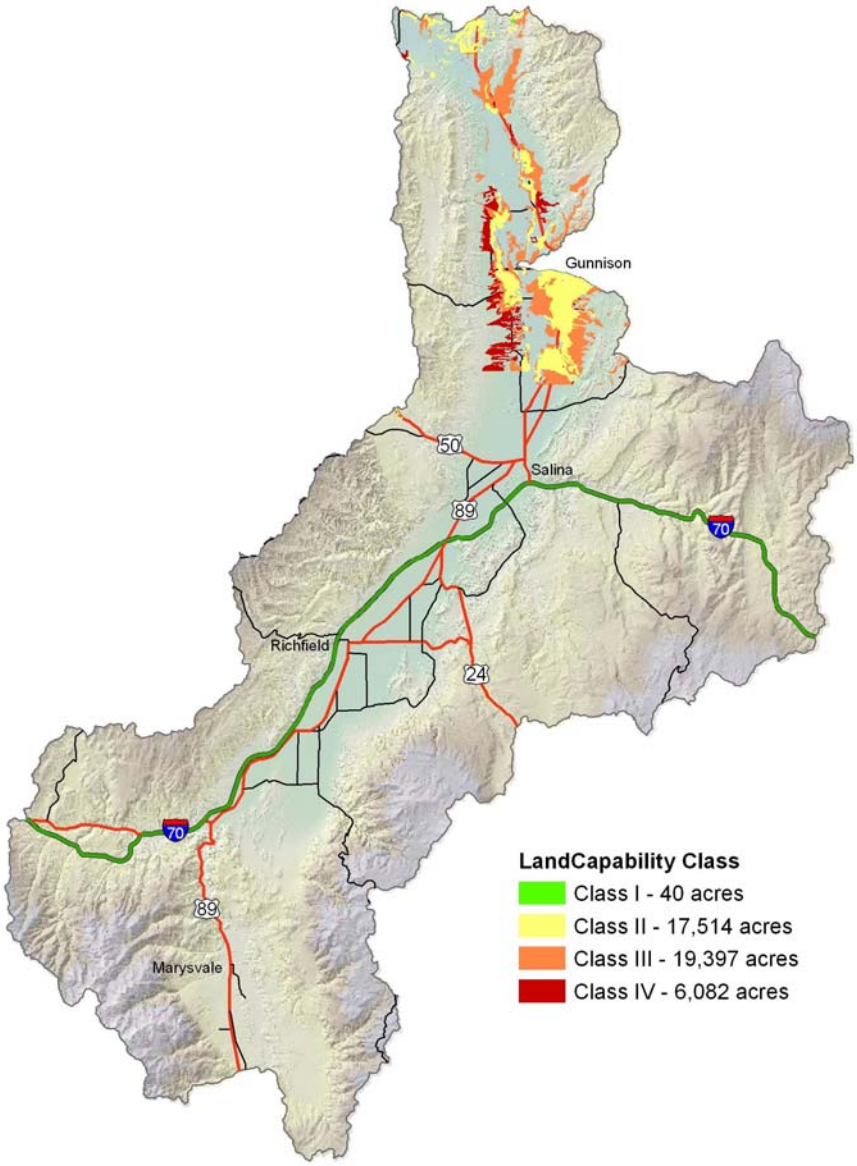
This unit is in the gently sloping to steep semiarid low mountains and hills in the Wasatch and Uinta Mountains. Soils have xeric or ustic moisture regimes with frigid or cryic temperature regimes. Precipitation ranges from 10 to about 18 inches. Elevations are about 5,000 to 8 ,000 feet. Range and cropland are the predominant land uses.

47.2 Wasatch and Uinta Mountains - High Mountains

This area is in the higher elevations of the Wasatch and Uinta Mountains. Precipitation ranges from 16 to about 30 inches. Elevations are usually more than 6,000 feet and range to more than 10,000 feet. The mountains are covered in a mixture of mountain big sagebrush, mountain brush, and coniferous forests; with alpine vegetation on the highest mountain summits.

Land Capability Class

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management. The criteria used in grouping the soils do not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



		Acres	Percentage
Land Capability Class (Irrigated Cropland & Pastureland Only)	**I** - slight limitations	40	0%
	II - moderate limitations	17,514	41%
	III - severe limitations	19,397	45%
	IV - very severe limitations	6,082	14%
	Total Crop & Pasture Lands	**43,033**	**100%**

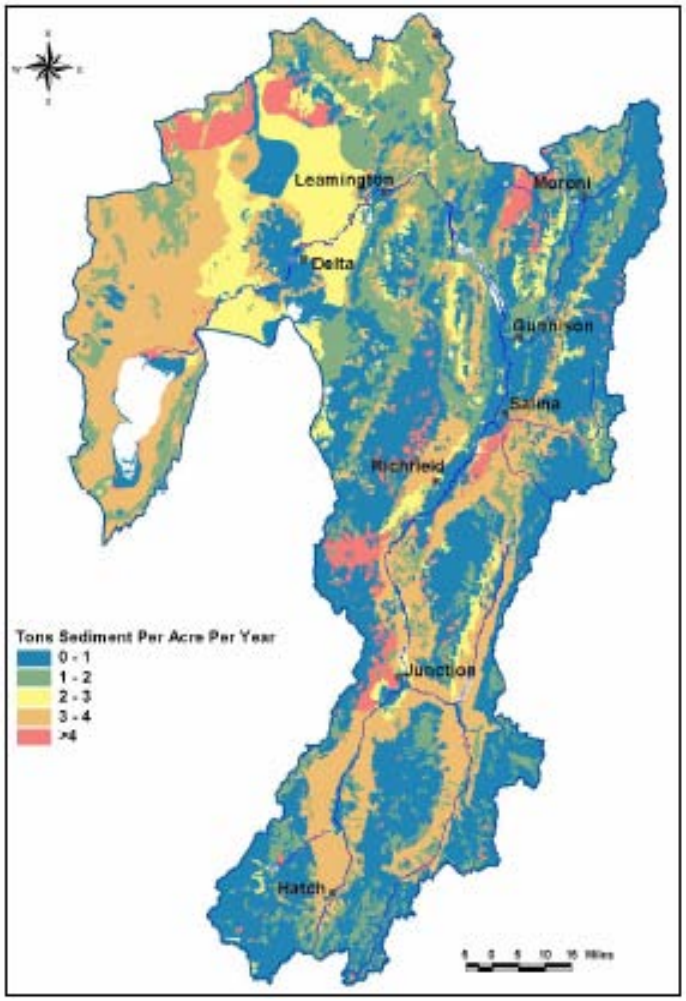
Soil Erosion

- Erosion by wind on the croplands and pasturelands increased by about 0.3 tons per acre from 1982 to 1987, while erosion through by water has remained relatively stable according to statistics. Conditions have stabilized since 1987 likely because of the amount of acres that have gone from flood irrigation to sprinkler

- Controlling erosion not only sustains the long-term productivity of the land, but also affects the amount of soil, pesticides, fertilizer, and other substances that move into the nation's waters

- The adjacent map gives a relative comparison of the predicted erosion within the whole Sevier River Basin. The alluvial fans, cropland areas and erosive shale outcrop areas are typically higher sediment producing landscapes in the basin

- Some of the higher sediment sources in the middle Sevier basin include: a) Cottonwood Creek near Richfield (1.7 ac-ft/sq mile); b) Sand and "H" Canyons near Monroe (1.1 ac-ft/sq. mile). *Source: State Water Plan, Sevier River Basin, 1999, p.10-9*



Predicted Erosion Sevier River Basin (DEQ, TMDL Study, 2004)

Resource Concerns – WATER

The Sevier River Basin is reported to be water short on a long term basis. The average annual yield of the river measured at Leamington is 261,435 acre feet. Land area producing crops shrinks and swells somewhat depending on the water supply in the system from year to year.

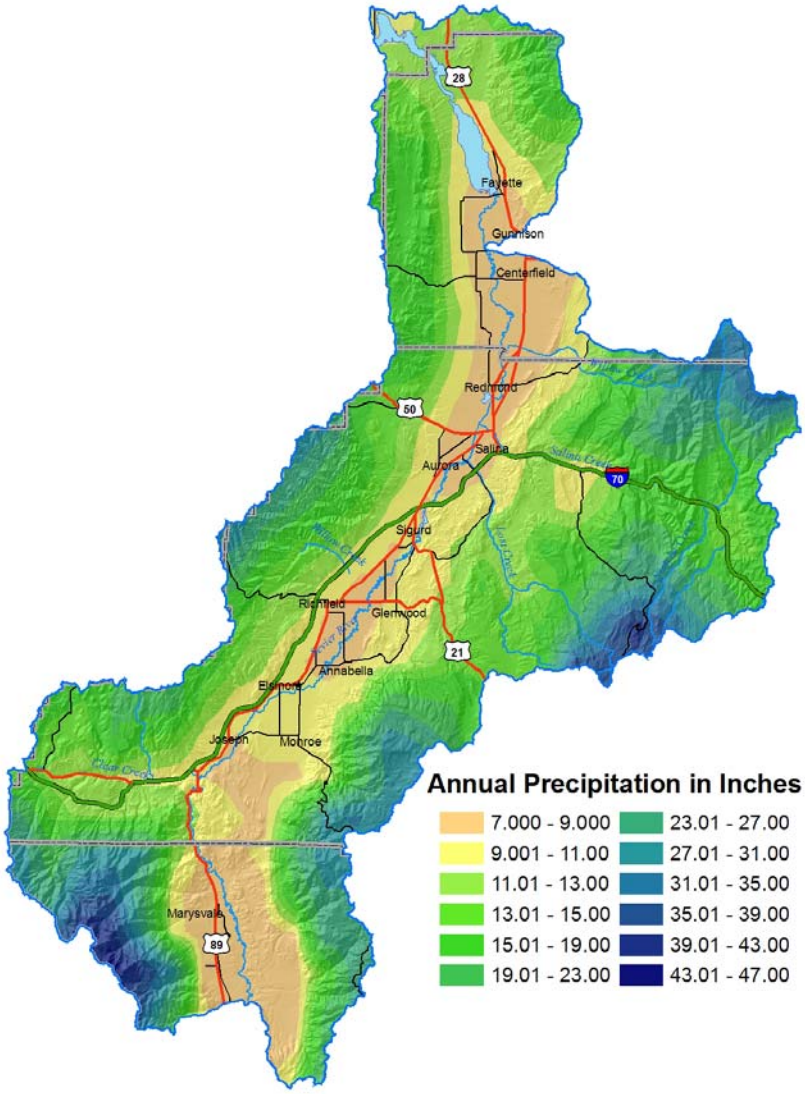
The river is listed on the 303d list for water quality impaired streams based on total dissolved solids. Deep wells are utilized to increase flow for irrigation and to dilute salinity of the stream on an as-needed basis. Effective water conserving practices include graded boarder or level basin irrigation systems and irrigation canal lining.

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Water Quantity	Water Quantity – Rangeland Hydrologic Cycle				X											
	Excessive Seepage			X												
	Excessive Runoff, Flooding, or Ponding	X	X													
	Excessive Subsurface Water															
	Drifted Snow															
	Inadequate Outlets															
	Inefficient Water Use on Irrigated Land	X	X	X												
	Inefficient Water Use on Non-irrigated Land															
	Reduced Capacity of Conveyances by Sediment Deposition	X	X	X										X		
	Reduced Storage of Water Bodies by Sediment Accumulation													X		
	Aquifer Overdraft															
	Insufficient Flows in Watercourses															
Water Quality, Groundwater	Harmful Levels of Pesticides in Groundwater													X		
	Excessive Nutrients and Organics in Groundwater													X		
	Excessive Salinity in Groundwater															
	Harmful Levels of Heavy Metals in Groundwater													X		
	Harmful Levels of Pathogens in Groundwater													X		
	Harmful Levels of Petroleum in Groundwater															
Water Quality, Surface	Harmful Levels of Pesticides in Surface Water													X		
	Excessive Nutrients and Organics in Surface Water													X		
	Excessive Suspended Sediment and Turbidity in Surface Water	X	X													
	Excessive Salinity in Surface Water															
	Water Quality – Colorado River Excessive Salinity															
	Harmful Levels of Heavy Metals in Surface Water															
	Harmful Temperatures of Surface Water															
	Harmful Levels of Pathogens in Surface Water															
	Harmful Levels of Petroleum in Surface Water															

Precipitation and Streams

Irrigation Water: Water budget data indicates there is an average annual shortage of nearly 7,500 acre-feet to fulfill crop potential consumptive use needs. This would require a diversion of 12,930 acre-feet (State Water Plan, Sevier River Basin,1999).

The use of the Sevier River is essentially based on inefficiency. Return flows from inefficient use upstream is generally a downstream water right (State Water Plan, Sevier River Basin, 1999).



	Irrigation Efficiency:	<40%	40 - 60%	>60%
Percentage of Total Acreage	Cropland	20%	40%	40%
	Pastureland	60%	30%	20%

Watersheds & Total Maximum Daily Load (TMDL)

List of Impaired Waters in HUC #1603003 and causes

Watershed = MIDDLE SEVIER
Fiscal Year Established = 2004

NOTE: Click on the underlined TMDL Document Name to see a detailed TMDL report. Click on the underlined Listed Water Impairment Name to see applicable listed waters for the TMDL. EPA is in the process of collecting TMDL information from the states. Because these efforts are on-going, there may be additional approved TMDLs that were not included in the listings below.

State	TMDL Document Name	TMDL Pollutant	TMDL Establishment Date	EPA Lead	Listed Water Cause of Impairment	Cycles Listed	Number of TMDLs
UT	SALINA CREEK	TOTAL DISSOLVED SOLIDS	AUG-17-2004	EPA APPROVED	TOTAL DISSOLVED SOLIDS	2002	1
UT	SEVIER RIVER FROM YUBA DAM	PHOSPHORUS	AUG-17-2004	EPA APPROVED	TOTAL PHOSPHORUS	2002	1
UT	SEVIER RIVER FROM YUBA DAM	SEDIMENT	AUG-17-2004	EPA APPROVED	SEDIMENT	2002	1
UT	SEVIER RIVER FROM YUBA DAM	TOTAL DISSOLVED SOLIDS	AUG-17-2004	EPA APPROVED	TOTAL DISSOLVED SOLIDS	2002	1

Source: http://iaspub.epa.gov/tmdl/w305b_report_v2.huc?p_huc=16030005&p_state=UT

AFO / CAFO

Feed Lot (Cattle)	Poultry	Swine	Mink	Other
30	5	1	1	9
4500	5000	200	400	1800

Potential Confined Animal Feeding Operations (PCAFO)

Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Mink	Other
No. of Farms	2	7				
No. of Animals	1000	3500				

Confined Animal Feeding Operations - Utah CAFO Permit

Animal Type	Dairy	Feed Lot (Cattle)	Poultry	Swine	Other
No. of Permitted Farms	1	4			
No. of Permitted Animals	400	8000			

Middle Sevier AFO/CAFO inventory – Middle Sevier River

Source: TMDL Study – Middle & Lower Sevier River, 2004

Operation Type & Size	Total ##	Unknown	<100'	100' to 500'	500' to 1000'	1000' to 2000'	2000' to 5000'	>5000
			<--------Distance to Waterway ----→					
AFO < 300 Animal Units	46	1	10	5	1	7	7	15
AFO 300 to 1000 units	16	0	2	1	1	1	2	9
CAFO> 1000 units	6	0	0	3	0	2	0	1
Neither AFO or CAFO <300 animal units	6	0	3	0	0	1	1	1
Neither AFO or CAFO 300 to 1000 animal units	1	0	1	0	0	0	0	0
Potential CAFO <300 units	6	0	6	0	0	0	0	0
Potential CAFO 300-1000 units	5	0	4	1	0	0	0	0
Total	86	1	26	10	2	11	10	26

CONSERVATION PROGRESS – STATUS –Middle Sevier # 16030003

Practices - HUC #16030003 - Middle Sevier	Applied			Planned			% Applied Utah			% Planned Utah		
Year	2004	2005	2006	2004	2005	2006	2004	2005	2006	2004	2005	2006
Brush Management (314) (ac)	6115	50	44	3680	4571	286	5%	8%	1%	39%	0%	0%
Channel Bank Vegetation (322) (ac)				2			2%	-	-	-	-	-
Clearing and Snagging (326) (ft)						600	-	-	1%	-	-	-
Composting Facility (317) (no)						1	-	-	50%	-	-	-
Comprehensive Nutrient Management Plan (100) (no)		5	4		9	5	-	11%	10%	-	13%	11%
Conservation Completion Incentive First Year (CCIA) (no)						10	-	-	0%	-	-	-
Conservation Completion Incentive Second Year (CCIB) (no)						3	-	-	2%	-	-	-
Conservation Crop Rotation (328) (ac)			14			88	-	-	0%	-	-	0%
Dam, Diversion (348) (no)			1	4		1	100 %	-	33%	-	-	100%
Dike (356) (ft)		300	200		2020		-	39%	-	-	5%	100%
Diversion (362) (ft)		570			570	1500	-	6%	16%	-	10%	-
Fence (382) (ft)	31278	1000	20994	23640	82923	10510	2%	9%	1%	8%	1%	8%
Filter Strip (393) (ac)					1		-	13%	-	-	-	-
Fish Raceway or Tank (398) (ft)						16	-	-	100%	-	-	-
Forage Harvest Management (511) (ac)	516	1215	489	1338	14418	6622	13%	41%	25%	36%	38%	24%
Grade Stabilization Structure (410) (no)						10	-	-	24%	-	-	-
Irrigation Land Leveling (464) (ac)		35	31	345	262	81	16%	19%	2%	-	4%	3%
Irrigation Regulating Reservoir (552) (no)	1	1	1		3		-	9%	-	33%	6%	8%
Irrigation System, Microirrigation (441) (ac)				1	10		0%	6%	-	-	-	-
Irrigation System, Sprinkler (442) (ac)	7	376	1092	2464	9765	7981	4%	22%	16%	1%	3%	8%
Irrigation System, Surface and Subsurface (443) (ac)		80			80	30	-	6%	1%	-	16%	-
Irrigation Water Conveyance, Ditch and Canal Lining, Galvanized Steel (428C) (ft)		940			940		-	100%	-	-	100%	-
Irrigation Water Conveyance, Ditch and Canal Lining, Plain Concrete (428A) (ft)		3402	772	22028	19561	2645	40%	40%	6%	-	14%	23%
Irrigation Water Conveyance, Pipeline, High-Pressure, Underground, Plastic (430DD) (ft)	14450	7662	24550	87831	142434	79927	7%	12%	7%	3%	2%	5%
Irrigation Water Conveyance, Pipeline, Reinforced Plastic Mortar (430GG) (ft)		600			1120		-	100%	-	-	100%	-
Irrigation Water Conveyance, Pipeline, Rigid Gated Pipeline (430HH) (ft)			700	16590	11100	16355	16%	20%	47%	-	-	6%
Irrigation Water Management (449) (ac)	586	1289	492	1708	15153	9855	4%	21%	13%	5%	7%	2%
Nutrient Management (590)	946	1215	202	995	11552	1567	5%	32%	4%	5%	24%	5%

(ac)												
Pasture and Hay Planting (512) (ac)	155	288	210	1383	1116	73	17%	14%	1%	2%	20%	18%
Pest Management (595) (ac)	551	581	202	520	11040	1567	3%	28%	2%	7%	13%	1%
Pipeline (516) (ft)	16800		1500	1000	36567	10000	0%	9%	2%	12%	-	2%
Pond (378) (no)		4	2	3	6	4	2%	9%	10%	-	11%	4%
Pond Sealing or Lining, Bentonite Sealant (521C) (no)						2	-	-	22%	-	-	-
Pothole-Wetland for Wildlife (774) (ac)					1		-	33%	-	-	-	-
Prescribed Burning (338) (ac)						4288	-	-	82%	-	-	-
Prescribed Grazing (528) (ac)	45		22378			13007	-	-	3%	0%	-	17%
Prescribed Grazing (528A) (ac)	6135	14306		10506	24817		3%	9%	-	4%	11%	-
Pumped Well Drain (532) (no)					822		-	1%	-	-	-	-
Pumping Plant (533) (no)	2		2	11		13	6%	-	7%	5%	-	4%
Range Planting (550) (ac)		3	200	900	18	405	2%	9%	2%	-	5%	2%
Rangeland Fertilization (721) (ac)					6694		-	13%	-	-	-	-
Residue Management, Mulch Till (329B) (ac)						107	-	-	1%	-	-	-
Residue Management, Seasonal (344) (ac)						482	-	-	5%	-	-	-
Roof Runoff Structure (558) (no)						1	-	-	50%	-	-	-
Sediment Basin (350) (no)			2	1	1		3%	9%	-	-	-	100%
Solid/Liquid Waste Separation Facility (632) (no)						1	-	-	25%	-	-	-
Spring Development (574) (no)					3		-	5%	-	-	-	-
Streambank and Shoreline Protection (580) (ft)				2500			11%	-	-	-	-	-
Structure for Water Control (587) (no)	3	5	3	49	26	19	11%	9%	10%	6%	5%	2%
Upland Wildlife Habitat Management (645) (ac)	320	8091	22758	78	367	22717	0%	0%	6%	0%	7%	15%
Waste Storage Facility (313) (no)		1	2	4	7	6	0%	7%	7%	-	2%	3%
Waste Treatment Lagoon (359) (no)					2	2	-	100%	50%	-	-	-
Water and Sediment Control Basin (638) (no)						1	-	-	8%	-	-	-
Water Well (642) (no)				3	3		1%	7%	-	-	-	-
Watering Facility (614) (no)	6		8	35	25	35	2%	9%	0%	0%	-	10%
Wetland Restoration (657) (ac)		40			51		-	3%	-	-	3%	-
Wetland Wildlife Habitat Management (644) (ac)	65			38	51	26	3%	0%	1%	7%	-	-
Windbreak/Shelterbelt Establishment (380) (ft)					2340		-	11%	-	-	-	-
Windbreak/Shelterbelt Renovation (650) (ft)					1980		-	100%	-	-	-	-
Year	**2001**	**2002**	**2003**				**2001**	**2002**	**2003**	-	-	-
Total Comprehensive Nutrient Management Plans (Numbers)	6	2	1				7%	4%	1%	-	-	-
Erosion Reduction Applied (Acres)	0	45					-	0%	-	-	-	-
Inventory & Evaluations		58	187				-	10%	14%	-	-	-
Total Irrigation Water Management (Acres)	5219	6878	2230				14%	12%	6%	-	-	-
Total Nutrient Management	0	875	532				-	5%	3%	-	-	-

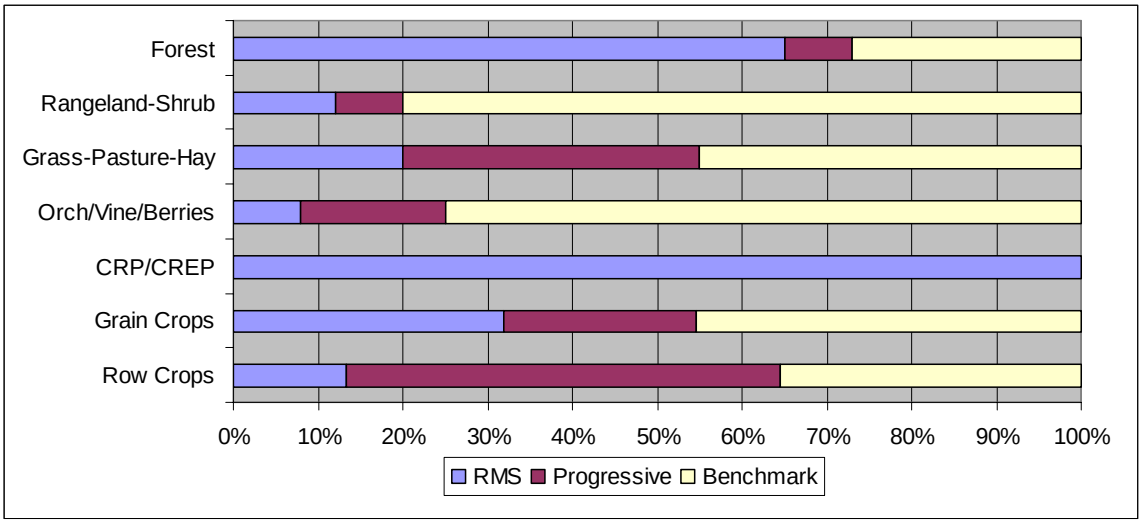
(Acres)										
Pest Management Systems Applied (595A) (Acres)	0	873	532	-	2%	2%	-	-	-	
Prescribed Grazing Applied (528A) (Acres)	0	4531	14523	-	1%	5%	-	-	-	
Total Waste Management (Numbers)		2		-	6%	-	-	-	-	
Total Wetlands Created, Restored, or Enhanced (Acres)	0	1		-	0%	-	-	-	-	
Total Wildlife Habitat (Acres)	2	843	15836	0%	0%	16%	-	-	-	

Based on information received from local conservationists in the watershed and NRCS Performance Results System Data. To be used only for general overview and is intended to reflect only general trends.

Progress over the last 5 years has been focused on

- Irrigation Water conveyance – pipelines, appurtenances
- Erosion control, irrigation water management and irrigation systems in areas of alfalfa and grain crops
- Nutrient Management
- Prescribed grazing and grazing lands
- Wildlife habitat management, including buffers, trees, and shrubs in riparian areas
- Most alfalfa producers watch their water consumption closely with the help of watershed-wide monitoring system.
- Most hay producers practice good irrigation water management, but adequate grazing and water management commonly is lacking on pastures.
- Most livestock operations are at the progressive level. Focus has been on meeting State CAFO regulations. High capital cost has hindered conservation adoption to attain the RMS level.

The existing conservation planning overview by landuse/crop is illustrated in the chart below. These estimates are general in nature and subject to some interpretation.



Major Irrigation Water Companies – Sevier Valley, Circleville-Marysvale

Company	Service Area	County
Joseph Irr Co	1,400	Sevier
Sevier Valley Canal Co	4,280	Sevier
Piute Res & Irr Co	14,000	Sanpete-Sevier
Monroe-South Bend Irr Co	2,630	Sevier
Monroe Irr C	2,910	Sevier
Brooklyn Irr Co	1,060	Sevier
Annabella Irr Co	2,280	Sevier
Elsinore Irr Co	1,200	Sevier
Richfield Canal Company	8,410	Sevier
Cove River Irr Co	1,060	Sevier
Vermillion Irr Co	4,290	Sevier
Cedar Ridge Irr Co	2,230	Sevier
Willow Bend Irr Co	1,680	Sevier
Rocky Ford Canal Co	3,230	Sevier
Lost Creek Irr Co	2,000	Sevier
Gooseberry Creek Irr Co	1,060	Sevier
Salina Creek Irr Co	2,050	Sevier
Redmond Lake Irr Co	1,280	Sevier
West View Irr Co	1,610	Sevier
Willow Creek Irr Co	1,230	Sevier
Dover It-r Co	2,050	Sevier
Gunnison-Fayette Irrig Co	3,120	Sevier
Circleville Irrig Co *(3 canals)*	4,230	Piute
Bullion Creek Irrig Co	1,310	Piute

Future water development within the middle sevier basin will depend heavily on coordination and planning with these entities as well as other federal, state and local authorities.

Resource Concerns – AIR, PLANTS, ANIMALS

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Air Quality	Particulate matter less than 10 micrometers in diameter (PM 10)															
	Particulate matter less than 2.5 micrometers in diameter (PM 2.5)															
	Excessive Ozone															
	Excessive Greenhouse Gas: CO2 (carbon dioxide)															
	Excessive Greenhouse Gas: N2O (nitrous oxide)															
	Excessive Greenhouse Gas: CH4 (methane)															
	Ammonia (NH3)															
	Chemical Drift	X	X	X	X							X				
	Objectionable Odors											X				
	Reduced Visibility											X				
	Undesirable Air Movement															
	Adverse Air Temperature															
Plant Suitability	Plants not adapted or suited															
Plant Condition	Plant Condition – Productivity, Health and Vigor				X											
	Threatened or Endangered Plant Species: Plant Species Listed or Proposed for Listing under the Endangered Species Act															
	Threatened or Endangered Plant Species: Declining Species, Species of Concern															
	Noxious and Invasive Plants	X	X	X	X											
	Forage Quality and Palatability			X	X											
	Plant Condition – Wildfire Hazard				X											
Fish and Wildlife	Inadequate Food															
	Inadequate Cover/Shelter															
	Inadequate Water															
	Inadequate Space															
	Habitat Fragmentation															
	Imbalance Among and Within Populations															
	Threatened and Endangered Species: Species Listed or Proposed for Listing under the Endangered Species Act															
Domestic Animals	Inadequate Quantities and Quality of Feed and Forage			X	X											
	Inadequate Shelter															
	Inadequate Stock Water			X	X											
	Stress and Mortality															

Noxious Weeds

The following weeds are officially designated and published as noxious for the State of Utah, as per the authority vested in the Commissioner of Agriculture under Section 4-17-3, Utah Noxious Weed Act:

- Bermudagrass** (cynodon dactylon)
- Canada thistle (cirsium arvense)
- Diffuse knapweed (centaurea diffusa)
- Dyers woad (isatis tinctoria L)
- Field bindweed (Wild Morning Glory) (convolvulus arvensis)
- Hoary cress (cardaria drabe)
- Johnsongrass (sorghum halepense)
- Leafy spurge (euphorbia esula)
- Medusahead (taeniatherum caput-medusae)
- Musk thistle (carduus mutans)
- Perennial pepperweed (lepidium latifolium)
- Perennial sorghum (sorghum halepense L & sorghum almum)
- Purple loosestrife (lythrum salicaria L.)
- Quackgrass (agropyron repens)
- Russian knapweed (centaurea repens)
- Scotch thistle (onopordum acanthium)
- Spotted knapweed (centaurea maculosa)
- Squarrose knapweed (centaurea squarrosa)
- Yellow starthistle (centaurea solstitialis)

Managing and controlling weeds must be a cooperative effort. There are many cooperative partnerships throughout the Region, some documented under Memorandums of Understandings, most under a Cooperative Weed Management Area (CWMA) Participative Agreement. Most efforts have many partners, including State Agencies, County governments, Universities, Extension offices, tribes, specific interest organizations, and private parties.
(Source: http://www.fs.fed.us/r4/resources/noxious_weeds/cwmas.shtml#ut)

The Sevier-Piute CWMA covers the basin area.

Other sources of information: http://www.utahweed.org/cwma.htm
Grant Information for weed control: http://www.utahweed.org/grants.htm

Wildlife Species of Greatest Conservation Need

The Utah Comprehensive Wildlife Conservation Strategy (CWCS) prioritizes native animal species according to conservation need. At-risk and declining species in need of conservation were identified by examining species biology and life history, populations, distribution, and threats. The following table lists species of greatest conservation concern in the watershed.

AT-RISK SPECIES				
	Common Name	**Group**	**Primary Habitat**	**Secondary Habitat**
FEDERALLY-LISTED				
Endangered:	(None)			
Threatened:	Bald Eagle	Bird	Lowland Riparian	Agriculture
Candidate:	Yellow-billed Cuckoo	Bird	Lowland Riparian	Agriculture
Proposed:	(None)			
STATE SENSITIVE				
Conservation Agreement Species:	Columbia Spotted Frog	Amphibian	Wetland	Wet Meadow
	Northern Goshawk	Bird	Mixed Conifer	Aspen
	Bonneville Cutthroat Trout	Fish	Water - Lotic	Mountain Riparian
	Least Chub	Fish	Water - Lentic	Wetland
Species of Concern:	American White Pelican	Bird	Water - Lentic	Wetland
	Bobolink	Bird	Wet Meadow	Agriculture
	Burrowing Owl	Bird	High Desert Scrub	Grassland
	California Floater	Mollusk	Water - Lotic	Water - Lentic
	Dark Kangaroo Mouse	Mammal	High Desert Scrub	Shrubsteppe
	Eureka Mountainsnail	Mollusk	Mountain Shrub	Rock
	Ferruginous Hawk	Bird	Pinyon-Juniper	Shrubsteppe
	Fringed Myotis	Mammal	Northern Oak	Pinyon-Juniper
	Greater Sage-grouse	Bird	Shrubsteppe	
	Kit Fox	Mammal	High Desert Scrub	
	Leatherside Chub	Fish	Water - Lotic	Mountain Riparian
	Lewis's Woodpecker	Bird	Ponderosa Pine	Lowland Riparian
	Long-billed Curlew	Bird	Grassland	Agriculture
	Pygmy Rabbit	Mammal	Shrubsteppe	
	Short-eared Owl	Bird	Wetland	Grassland
	Three-toed Woodpecker	Bird	Sub-Alpine Conifer	Lodgepole Pine
	Townsend's Big-eared Bat	Mammal	Pinyon-Juniper	Mountain Shrub
	Utah Physa	Mollusk	Wetland	
	Western Toad	Amphibian	Wetland	Mountain Riparian

*Definitions of habitat categories can be found in the Utah Comprehensive Wildlife Conservation Strategy.

Source: http://www.wildlife.utah.gov/cwcs/utah_cwcs_strategy.pdf#search=%22utah%20comprehensive%20wildlife%20conservation%20strategy%22

The Utah CWCS also prioritizes habitat categories based on several criteria important to the species of greatest conservation need. The top ten hey habitats state-wide are (in order of priority):

1) **Lowland Riparian** (riparian areas <5,500 ft elevation; principal vegetation: Fremont cottonwood and willow)
2) **Wetland** (marsh <5,500 ft elevation; principal vegetation: cattail, bulrush, and sedge)
3) **Mountain Riparian** (riparian areas >5,500 ft elevation; principal vegetation: narrowleaf cottonwood, willow, alder, birch and dogwood)
4) **Shrubsteppe** (shrubland at 2,500 - 11,500 ft elevation; principal vegetation: sagebrush and perennial grasses)
5) **Mountain Shrub** (deciduous shrubland at 3,300 - 9,800 ft elevation; principal vegetation: mountain mahogany, cliff rose, bitterbrush, serviceberry, etc.)
6) **Water - Lotic** (open water; streams and rivers)
7) **Wet Meadow** (water saturated meadows at 3,300 - 9,800 ft elevation; principal vegetation: sedges, rushes, grasses and forbs)
8) **Grassland** (perennial and annual grasslands or herbaceous dry meadows at 2,200 - 9,000 ft elevation)
9) **Water - Lentic** (open water; lakes and reservoirs)
10) **Aspen** (deciduous aspen forest at 5,600 - 10,500 ft elevation)

Note: Future Funding Opportunity for Wildlife Habitat Enhancement:
State Areas For Wildlife Enhancement

What is State Areas for Wildlife Enhancement (SAFE)?
This is a first-time ever opportunity for state and local government and non-profits to submit proposals to the USDA Farm Service Agency (FSA) to address habitat restoration and enhancement needs for high priority wildlife through the Conservation Reserve Program (CRP). Species that could thrive on restored cropland – native bees, butterflies, grassland birds, wetland wildlife, ocelots, gopher tortoises, and many, many more animal and plant communities that are identified as at risk in State Wildlife Action Plans – could benefit.

Applicants with successful proposals do not receive a check from USDA, but rather USDA sets aside a specific number of acres for them. Habitat restoration funding on those acres will be determined when land is enrolled and has a property-specific conservation plan. While funding is not available for staff or project monitoring, it funds the habitat improvement and restoration – and landowner payments – that are essential to many conservation projects working to protect rare wildlife.

- Up to 90% cost-share for the cost to prepare habitat and plant vegetation for wildlife
- 50% cost share for management, such as prescribed burns, that is required to maintain the vegetation for wildlife during the 10-15 year contract
- Whole fields can be enrolled as well as stream and wetland buffers

- For more information look on the web at: http://www.fsa.usda.gov/ - Click on Conservation Programs

Resource Concerns – SOCIAL AND ECONOMIC

Categories	Specific Resource Concern / Issue	Crop	Hay	Pasture	Grazed Range	Grazed Forest	Pasture Native/Naturalized	Wildlife	Watershed Protection	Forest	Headquarters	Urban	Recreation	Water	Mined	Natural Area
Social and Economic	Non-Traditional Landowners and Tenants															
	Urban Encroachment on Agricultural Land	X	X	X	X					X				X		
	Marketing of Resource Products	X	X													
	Innovation Needs															
	Non-Traditional Land Uses	X	X	X										X		
	Population Demographics, Changes and Trends															
	Special Considerations for Land Mangement (High State and Federal Percentage)				X					X						
	Active Resource Groups (CRMs, etc)															
	Full Time vs Part Time Agricultural Communities													X		
	Size of Operating Units															
	Land Removed from Production through Easments	X	X	X												
	Land Removed from Production through USDA Programs	X														
Other	Recreation, Water Sources, Dams															

Census and Social Data

Number of Farms: The number of farms in the watershed is 562 totaling 110,055 acres, making the average farm size about 196 acres. There are about 362 beginning farmers/ranchers, and 154 "potential limited resource farmers".

Social Capital: (Moderate)
Overall, landowners in this basin are willing to participate in programs to implement conservation. There is concern over the cost-share rate of 50 percent for implementation compared to a 75 percent cost-share rate. The potential for landowners to make up the other 25 percent through local, state or other means is favorable.

In many ways, the ability of communities to successfully implement locally led conservation planning is related to social capital. If the community rated "moderate" or "low" in social capital, the following web site http://www.ssi.nrcs.usda.gov/ssi/C_Training/TR001_LocallyLed.htm provides instructions for how to acquire a video and nine training modules on the locally led planning process. Additionally, there is a second evaluation procedure on this web site that scores your efforts on implementing past, present, or future locally led conservation planning.

Public Survey/Questionnaire Results: ***(See Sevier, Piute and Sanpete Assessment Data-2005)***

Footnotes / Bibliography

1. General information about Servier County from the official Sevier County website: http://www.co.sevier.ut.us

2. Location and land ownership maps made using GIS shape files from the Automated Geographical Reference Center (AGRC), a Utah State Division of Information Technology. Website: http://agrc.utah.gov/

3. Land Use/Land Cover layer developed by the Utah Department of Water Resources. A polygon coverage containing water-related land-use for all 2003 agricultural areas of the state of Utah. Compiled from initial USGS 7.5 minute Digital Raster Graphic water bodies, individual farming fields and associated areas are digitized from Digital Orthophotos, then surveyed for their land use, crop type, irrigation method, and associated attributes.

4. Prime and Unique farmlands derived from SURGO Soils Survey UT607 and Soil Data Viewer. Definitions of Prime and Unique farmlands from U.S. Geological Survey, http://water.usgs.gov/eap/env_guide/farmland.html#HDR5

5. Land Capability Classes derived from SURGO Soils Survey UT607 and Soil Data Viewer.

6. Tons of Soil Loss by Water Erosion data gathered from National Resource Inventory (NRI) data. Estimates from the 1997 NRI Database (revised December 2000) replace all previous reports and estimates. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is due to changes in statistical estimation protocols, and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error disc ordered in March 2000. For more information: http://www.nrcs.usda.gov/technical/NRI/. Some data, maps, tables used from the Utah State Water Plan, Sevier River Basin, 1999 and from "Soils, Erosion and Sedimentation – Sevier River Basin, Utah, 1971".

7. Precipitation data was developed by the Oregon Climate Service at Oregon State University using average monthly or annual precipitation from 1960 to 1990. Publication date: 1998. Data was downloaded from the Resource Data Gateway, http://dgateway-wb01.lighthouse.itc.nrcs.usda.gov/lighthouse

8. Stream Flow data from Utah division of Water Rights.

9. Stream length data calculated using ArcMap and 100k stream data from AGRC and 303d waters from the Utah Department of Environmental Quality.

10. Watershed information from Utah Division of Water Quality.

11. The 2003 noxious weed list was obtained from the State of Utah Department of Food and Agriculture. For more information contact Steve Burningham, 801-538-7181 or visit their website at http://ag.utah.gov/plantind/noxious_weeds.html

12. Wildlife information derived from the Utah Division of Wildlife Resources' Comprehensive Wildlife Conservation Strategy (CWCS) (http://wildlife.utah.gov/cwcs/) and from the Utah Conservation Data Center (http://dwrcdc.nr.utah.gov/ucdc/).

13. County population data from the U.S. Census Bureau, Utah Quick Facts, http://quickfacts.census.gov/qfd/states/49000.html

14. Farm information obtained from the National Agricultural Statistics Service, 2002 Census of Agriculture. http://www.nass.usda.gov/census/census02/volume1/index2.htm

15. TMDL Water Quality Study of the Middle & Lower Sevier River, Utah Division of Water Quality, 2004
16. Utah State Water Plan, Sevier River Basin, June 1999